PROGRAMME TO CONDUCT A
FIELD TRIAL OF IMPROVED
GAS FURNACES AND BOILERS.

INSTALLATION DATA REPORT.

Consumers' Gas

CONTRACT REPORT NUMBER: OSQ80-00194
REQUISITION NUMBER: 23440-0-9142
CONTRACTOR: Hiram Walker-Consumers Gas

PROGRAMME TO CONDUCT A FIELD TRIAL OF IMPROVED GAS FURNACES AND BOILERS.

INSTALLATION DATA REPORT.

THE CONSUMERS' GAS COMPANY LTD.

for

Canadian Combustion Research Laboratory
Energy Research Laboratories, CANMET
Energy, Mines and Resources Canada

June 1981

DSS File Number: 23SQ.23440-0-9142
CANMET Scientific Authoriy: A.C.S. Hayden

35pp

SEP 8 1988
MICROMEDIA

INTRODUCTION

The Consumers' Gas Company Ltd initiated a project during October 1980 to field test newly developed gas furnaces and boilers.

After consultation with CANMET personnel, a programme and methodology were developed for the testing of equipment at the following sites:

Site A - Hydropulse hydronic boiler with electric water heater.

Site B - Heil Quaker, intermediate efficiency furnace, with electric water heater.

Site C - Clare, high efficiency condensing furnace, with electric water heater.

Site D - Heil Quaker, intermediate efficiency furnace, operating with alternately fired conventional gas water heater and wall vented water heater.

Site E - Intermittent ignition device installed on conventional furnace.

Site F - Automatic vent dampers installed on furnace and water heater.

Site G - Automatic vent dampers installed on furnace and water heater.

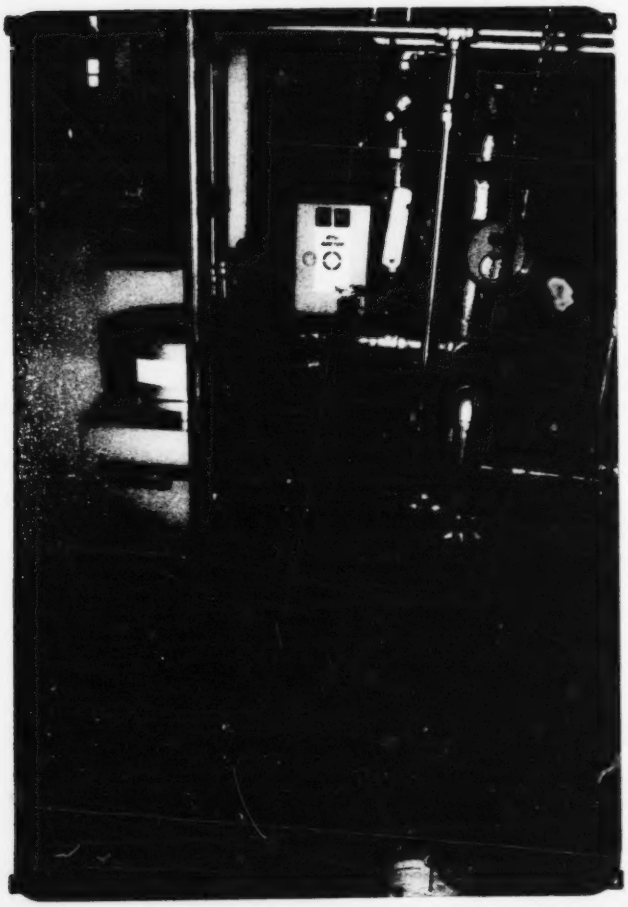
Attached is demographic and building data on the sites selected for the field tests. As installations are completed prior to the 1981/82 heating season, additional data sheets will be prepared to complete the information on each test site.

Site A.

Address: 186 Donlea
East York.

Test: Hydropulse Boiler

An older home situated in Metropolitan Toronto.
This residence is owned by R. Huggard.
Note: plastic exhaust pipe on left side.



(Left) The Hydropulse boiler.
With the extra piping, operation
can be shifted to the Norseman (right)
by turning 4 valves and an electrical
switch. Note BTU meter and gas
submeter.

HOMEOWNER QUESTIONNAIRE

GENERAL INFORMATION

Name of occupant R. Huggard

Installation address 186 Donlea

Single Family Residence? Yes Multiple? _____

Approx. age of structure 34 How long have you resided? 2

No. of occupants 2 Adults 2 How many are employed 2

If two or more, which hours 8:00 - 4:00 Monday - Friday

What indoor temperatures do you maintain:

While at work 68°F (20°C) Hours Always

Daytime _____ Hours _____

Nighttime _____ Hours _____

STRUCTURE

Do you have a basement Yes Is it heated Yes

Number of stories 1

Type of construction (Brick or frame) Brick

Does it have storm windows Yes Storm doors Yes

Is it insulated Yes Was any insulation installed recently No

If so, when _____ Where, and thickness _____ Type _____

In your opinion, is building of tight construction _____

No. of basement windows 5 Do they close tightly Yes

Is the door to the basement normally closed No

No. of exhaust fans: Kitchen _____ Bathroom _____ Other _____

Where is thermostat located (room) Dining Room Inside or Outside wall Inside

Does this house have a fireplace Yes Does it have a good damper Yes

APPLIANCES

Does this residence have a gas light No

Input or number of mantles _____

Does this residence have an electric or gas range Electric

If gas: Type _____ Location _____

Does this residence have a gas grill No

Hourly inputs _____ How often is it used _____

Does this residence have a gas or electric clothes dryer Electric

If gas: Location _____ Vented to outdoors? _____

Size of vent pipe _____ Hourly input _____

How often is it used _____

Does this residence have a gas fired water heater _____

Storage capacity _____ Hourly input _____

Size of flue pipe _____ Does this pipe connect to the same chimney as the heating system. _____

Does this residence have air conditioning _____

Central _____ Window units _____ How many? _____

HEATING SYSTEM

Present Furnace.

Trade Name Norseman - converted

Model N-110

Manufacturer Norseman

Rated Input 120,000 BTU/hr

Age Converted 2 years ago

Type of Ignition Pilot

Type of Venting 6" B vent

Test Furnace.

Trade Name Hydropulse

Model A-100

Manufacturer Hydrotherm

Rated Input 100,000 BTU/hr

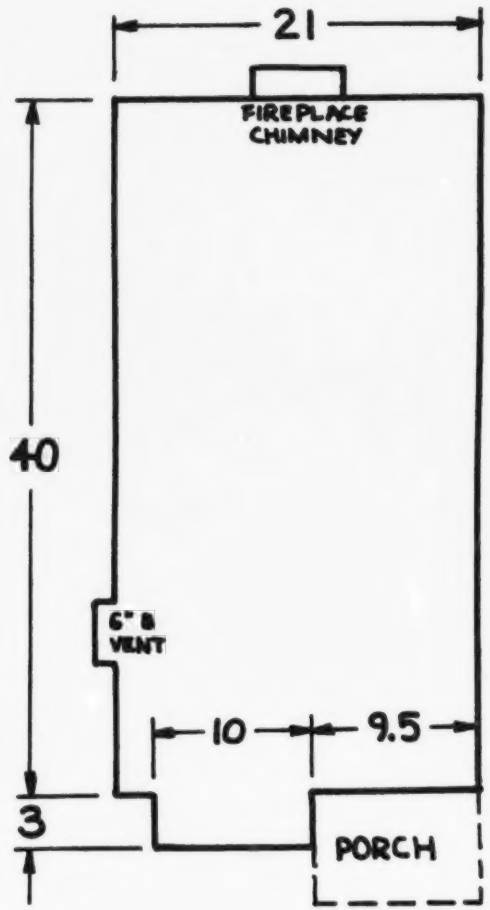
Age 1 year

Type of Ignition Electric

Type of Venting 1 1/2 PVC plastic pipe

TEST CHANGES:

SITE:	186 DONLEA
	EAST YORK
TEST :	HYDROPULSE
OCCUPANT :	R. HUGGARD



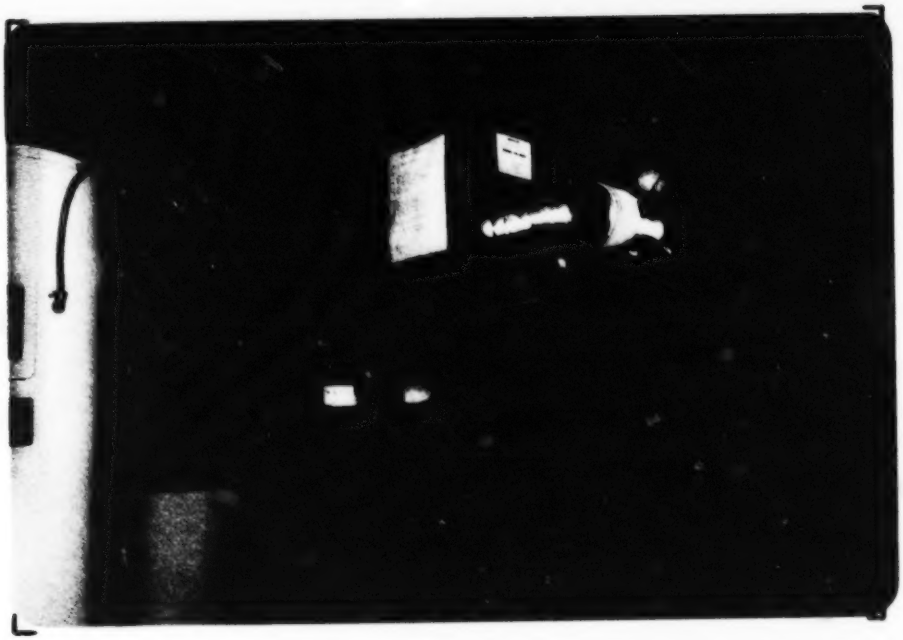
SCALE: 1" = 10'0"

Site B.

Address: 29 Snowshoe
Crescent,
Thornhill.

Test: Heil Quaker
Energy Marshall

This residence was constructed 8 years ago.
R. Riedl is the original owner.



(Left) The test furnace; a Heil Quaker Energy Marshall model HUGE 080AG01.

(Right) The original Coleman model 2692N326. Both furnaces are rated at 80,000 BTU/h (23.5 kw)

HOMEOWNER QUESTIONNAIRE

GENERAL INFORMATION

Name of occupant R. Riedl

Installation address 29 Snowshoe Crescent, Thornhill

Single Family Residence? Yes Multiple? _____

Approx. age of structure 8 years How long have you resided? 8 years

No. of occupants 4 Adults 2 How many are employed 1

If two or more, which hours _____

What indoor temperatures do you maintain:

While at work 66°F (19°C) Hours all the time

Daytime _____ Hours _____

Nighttime _____ Hours _____

STRUCTURE

Do you have a basement Yes Is it heated Yes

Number of stories 2

Type of construction (Brick or frame) Frame

Does it have storm windows Yes Storm doors Yes

Is it insulated Yes Was any insulation installed recently No

If so, when _____ Where, and thickness _____ Type _____

In your opinion, is building of tight construction Not very tight

No. of basement windows 2 Do they close tightly 1 does

Is the door to the basement normally closed Yes

No. of exhaust fans: Kitchen 1 Bathroom 1 Other -

Where is thermostat located (room) Living room Inside or Outside wall Inside

Does this house have a fireplace No Does it have a good damper _____

APPLIANCES

Does this residence have a gas light No

Input or number of mantles _____

Does this residence have an electric or gas range Gas

If gas: Type Hardwick Location Kitchen

Does this residence have a gas grill Yes

Hourly inputs 30,000 BTU How often is it used 3 times weekly

Does this residence have a gas or electric clothes dryer Gas

If gas: Location Basement Vented to outdoors? Yes

Size of vent pipe 4" Hourly input _____

How often is it used Daily

Does this residence have a gas fired water heater Yes

Storage capacity 33 imp. gals. Hourly input 30,000

Size of flue pipe 4" Does this pipe connect to the same chimney as the heating system. Yes

Does this residence have air conditioning Yes

Central Yes Window units No How many? -

HEATING SYSTEM

Present Furnace.

Trade Name Coleman

Model 2692N326

Manufacturer Coleman

Rated Input 80,000 BTU

Age 8 years

Type of Ignition Pilot

Type of Venting 5" B vent

Test Furnace.

Trade Name Energy Marshall

Model HUGE 080 AG01

Manufacturer Heil Quaker

Rated Input 80,000 BTU

Age 1 year

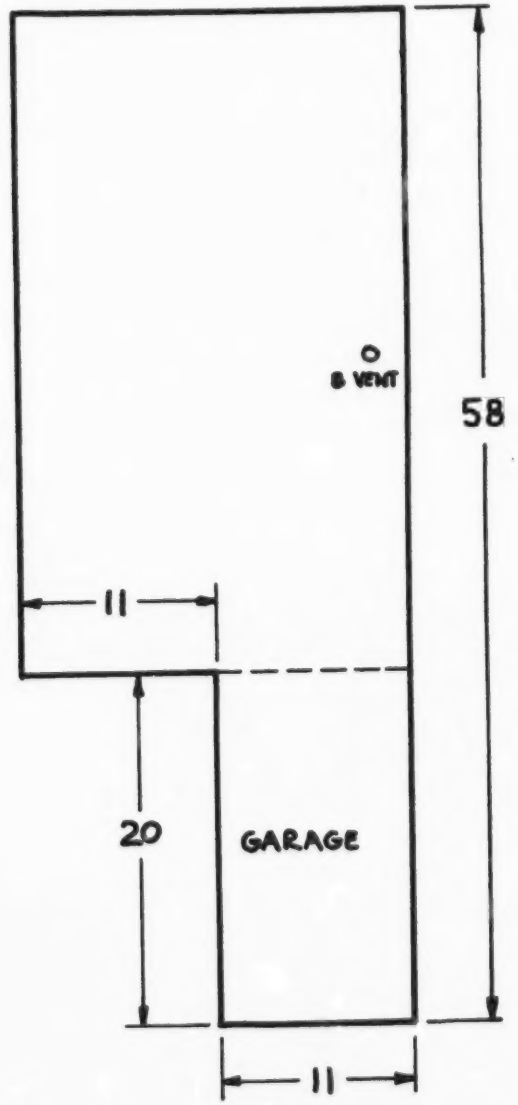
Type of Ignition Electric spark

Type of Venting 3" power vented through wall.

Water heater was replaced with electric for test purposes.

TEST CHANGES:

SITE:	29 SNOWSHOE CRES.
	THORNHILL
TEST:	HEIL QUAKER
OCCUPANT:	R. RIEDL



SCALE: 1" = 10'0"

SITE: C

Address: 634 Cowan Circle, Pickering, Ontario.

Test: Clare Megasave Condensing Furnace.

(Photographs to follow).

HOMEOWNER QUESTIONNAIRE

GENERAL INFORMATION

Name of occupant D. Fletcher

Installation address 634 Cowan Circle, Pickering

Single Family Residence? Yes Multiple? _____

Approx. age of structure 7 months How long have you resided? 7 months

No. of occupants 6 Adults 5 How many are employed 3

If two or more, which hours all 8:30 to 4:30

What indoor temperatures do you maintain:

While at work 72°F (22°C) Hours always

Daytime _____ Hours _____

Nighttime _____ Hours _____

STRUCTURE

Do you have a basement Yes Is it heated Yes

Number of stories 2 plus walkout basement

Type of construction (Brick or frame) Brick veneer with partial alum. siding

Does it have storm windows No Storm doors 1 (Front)

Is it insulated Yes Was any insulation installed recently No

If so, when _____ Where, and thickness _____ Type _____

In your opinion, is building of tight construction Yes

No. of basement windows 1 + walkout Do they close tightly Yes

Is the door to the basement normally closed _____

No. of exhaust fans: Kitchen One Bathroom One Other -

Where is thermostat located (room) Living room Inside or Outside wall Inside

Does this house have a fireplace Yes Does it have a good damper Yes

APPLIANCES

Does this residence have a gas light No

Input or number of mantles _____

Does this residence have an electric or gas range Electric

If gas: Type Location

Does this residence have a gas grill No

Hourly inputs _____ How often is it used _____

Does this residence have a gas or electric clothes dryer Gas

If gas: Location Main floor Vented to outdoors? Yes

Size of vent pipe 4" Hourly input 25,000 BTU

How often is it used Daily

Does this residence have a gas fired water heater Yes

Storage capacity 33 imp. gals Hourly input 30,000 BTU

Size of flue pipe 3" Does this pipe connect to the same chimney as the heating system. Yes

Does this residence have air conditioning No

Central _____ Window units _____ How many? _____

HEATING SYSTEM

Present Furnace.

Trade Name Clare

Model MBG 82-M

Manufacturer Clare Bros.

Rated Input 82,000 BTU

Age 1 year

Type of Ignition Pilot

Type of Venting 5" vent to 6" flue in chimney

Test Furnace.

Trade Name Megasave

Model _____

Manufacturer Clare Bros.

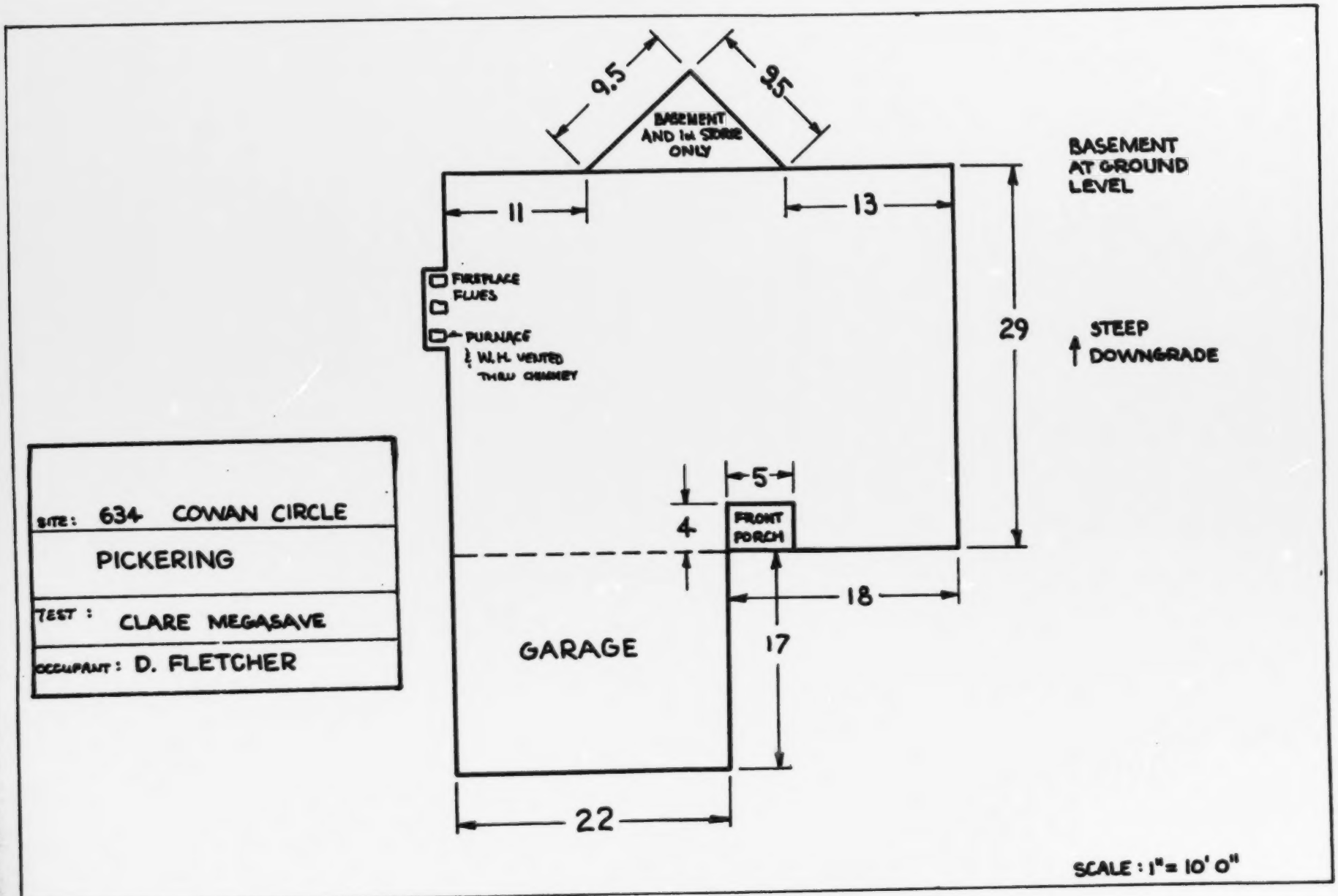
Rated Input 100,000 BTU

Age New

Type of Ignition Electric

Type of Venting Power vented through wall

TEST CHANGES:

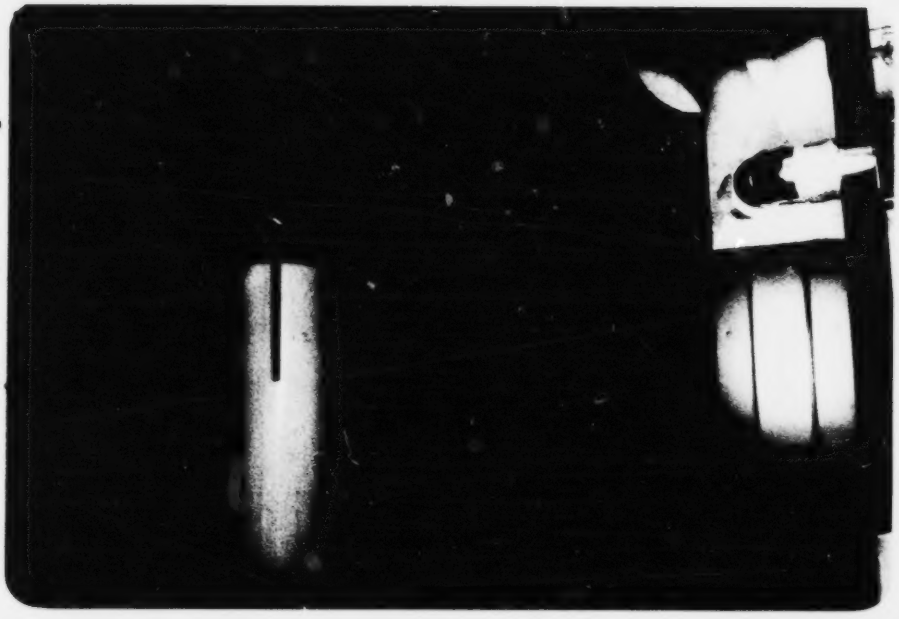

9.5
9.5
BASEMENT AND 1st STOREY ONLY
BASEMENT AT GROUND LEVEL
11
13
29
FIREPLACE FLUES
FURNACE & W.H. VENTED THRU CHIMNEY
STEEP DOWNGRADE
5
4
FRONT PORCH
18
17
GARAGE
22
SITE: 634 COWAN CIRCLE
PICKERING
TEST: CLARE MEGASAVE
OCCUPANT: D. FLETCHER
SCALE: 1" = 10' 0"

Site D.

Address: 27 Larry Street,
Caledon East.

Test: Heil Quaker
Energy Marshall.

A large house in a rural area. This house was built 8 years ago and has been owned since by D. Shearer.



(Left) The original furnace, a Chrysler Airtemp model 4212001EXU.

(Right) On test. Heil Quaker Energy Marshall. Note duct gates and gas submeters.

HOMEOWNER QUESTIONNAIRE

GENERAL INFORMATION

Name of occupant D. Shearer

Installation address 27 Larry Street, Caledon East

Single Family Residence? Yes Multiple? _____

Approx. age of structure 8 years How long have you resided? 8 years

No. of occupants 4 Adults 2 How many are employed 2

If two or more, which hours both 8 - 4 Mon.to Fri.

What indoor temperatures do you maintain:

While at work 65°F (18°C) Hours 9:00 - 5:30 PM

Daytime 70-72°F (21-22°C) Hours 5:30 - 11:30 pm

Nighttime 63-65°F (17-18°C) Hours 11:30 - 6:00 am

STRUCTURE

Do you have a basement Yes Is it heated Yes

Number of stories 1 1/2

Type of construction (Brick or frame) Frame

Does it have storm windows No Storm doors Yes

Is it insulated Yes Was any insulation installed recently Yes

If so, when 1980 Where, and thickness 3" ceiling Type Fibreglass

In your opinion, is building of tight construction Average

No. of basement windows 2 Do they close tightly Average

Is the door to the basement normally closed No

No. of exhaust fans: Kitchen - Bathroom 1 Other -

Where is thermostat located (room) Dining room Inside or Outside wall Inside

Does this house have a fireplace 2 Does it have a good damper 1 yes; 1 no

APPLIANCES

Does this residence have a gas light NO

Input or number of mantles _____

Does this residence have an electric or gas range Gas

If gas: Type Hardwick Location Kitchen

Does this residence have a gas grill BBQ

Hourly inputs 30,000 How often is it used 3 times per week, 20 weeks per year

Does this residence have a gas or electric clothes dryer Gas

If gas: Location Basement Vented to outdoors? Yes

Size of vent pipe 4" Hourly input 25,000

How often is it used 6 times weekly

Does this residence have a gas fired water heater Yes

Storage capacity 33 imp. gals. Hourly input 30,000

Size of flue pipe 3" Does this pipe connect to the same chimney as the heating system. Yes

Does this residence have air conditioning Yes

Central Yes Window units - How many?

HEATING SYSTEM

Present Furnace.		Test Furnace.	
Trade Name	Air Temp	Trade Name	Energy Marshall
Model	4212001 EXU	Model	HUGE 080 AG01
Manufacturer	Chrysler	Manufacturer	Heil Quaker
Rated Input	120,000	Rated Input	80,000
Age	8 years	Age	1 year
Type of Ignition	Pilot	Type of Ignition	Spark
Type of Venting		Type of Venting	4" B vent

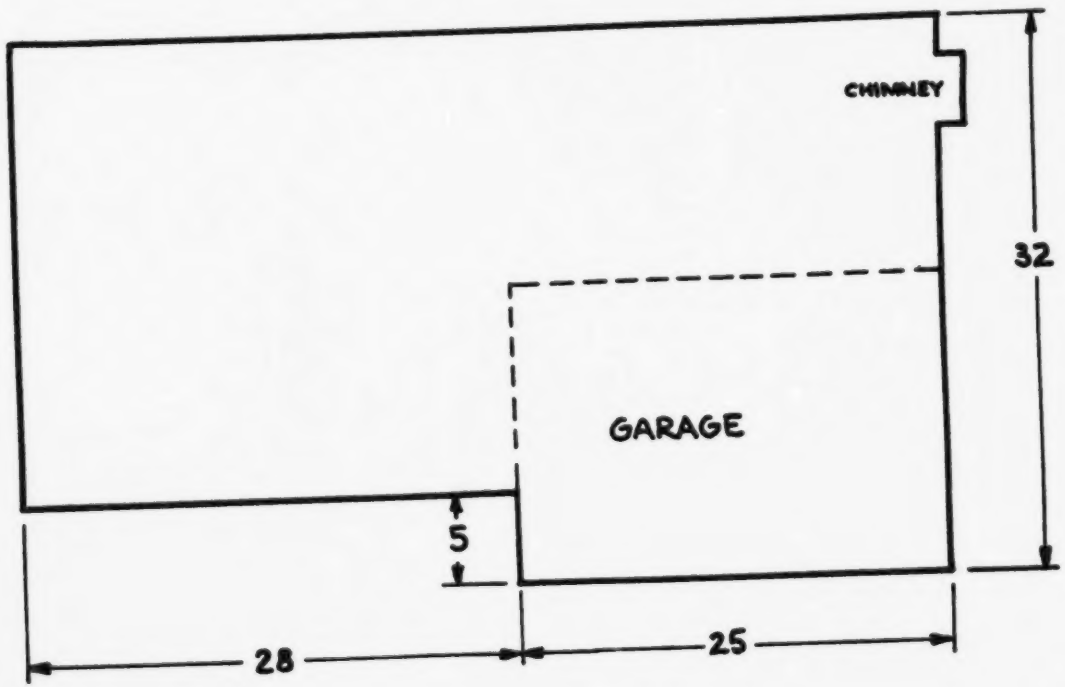
TEST CHANGES:

SITE: 27 LARRY ST.

CALDON EAST

TEST : HEIL QUAKER

OCCUPANT: D. SHEARER



SCALE : 1" = 10'0"

(Right) Site E

Address:

91 Valley Stream Dr.
Scarborough.

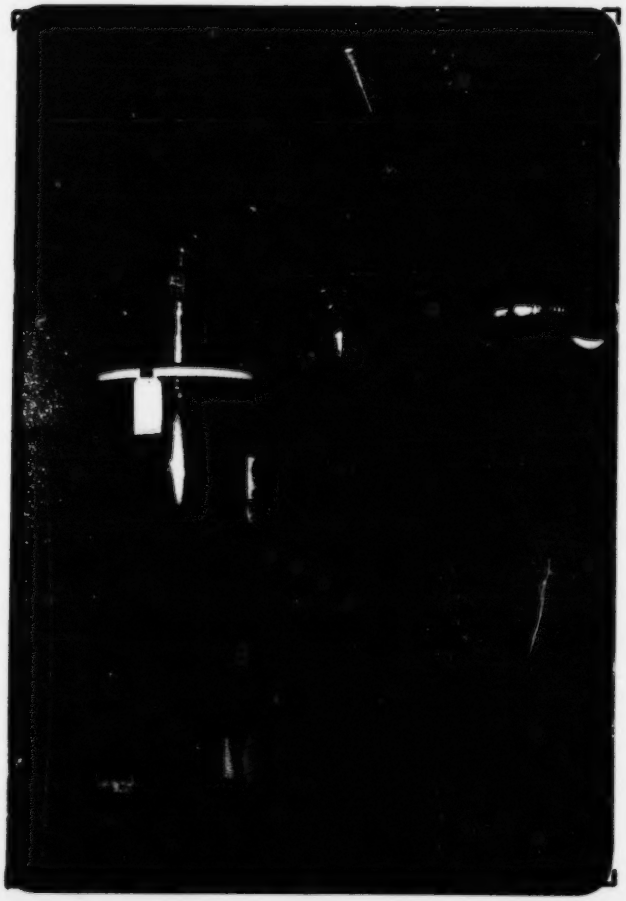
Test: Spark ignition

(Left) Site F

Address:

93 Valley Stream Dr.
Scarborough.

Test: Automatic
Vent Damper.



(Above). This semi detached unit was built last year. K. Gray (left) and D. Powrie (right) are the original owners. In roof centre are the fireplace flues. In the back corners are B vents for furnaces.

Tempmatic model 4205-19-1 furnace and Consumers' Gas rental water heater. Both residences are equally equipped.

HOMEOWNER QUESTIONNAIRE

GENERAL INFORMATION

Name of occupant D. Powrie

Installation address 91 Valley Stream Drive, Scarborough

Single Family Residence? Semi-detached Multiple? _____

Approx. age of structure 1 year How long have you resided? 1 year

No. of occupants 2 Adults 2 How many are employed 2

If two or more, which hours 8:00 - 4:00 Mon. to Fri.

What indoor temperatures do you maintain:

While at work 65°F (18°C) Hours 9 7:30-4:30

Evening ~~Daytime~~ 70-71°F (21-22°C) Hours 6 4:30-10:30

Nighttime 65°F (18°C) Hours 9 10:30-7:30

STRUCTURE

Do you have a basement Yes Is it heated Yes

Number of stories 2

Type of construction (Brick or frame) Frame

Does it have storm windows Thermal Storm doors 1 (Front)

Is it insulated Yes Was any insulation installed recently Yes

If so, when Planned for September 1981 Where, and thickness _____ Type Fibreglass bats

In your opinion, is building of tight construction Not really

No. of basement windows 1 Do they close tightly No

Is the door to the basement normally closed Yes

No. of exhaust fans: Kitchen _____ Bathroom _____ Other _____

Where is thermostat located (room) Dining room Inside or Outside wall Inside

Does this house have a fireplace Yes Does it have a good damper Yes

APPLIANCES

Does this residence have a gas light No

Input or number of mantles _____

Does this residence have an electric or gas range Gas range and oven

If gas: Type 4 burner Location Kitchen

Does this residence have a gas grill No

Hourly inputs _____ How often is it used _____

Does this residence have a gas or electric clothes dryer Gas

If gas: Location Basement Vented to outdoors? Yes

Size of vent pipe 4" flex Hourly input _____

How often is it used Twice weekly

Does this residence have a gas fired water heater 1) CGRI High Efficiency
2) Consumers' rental

Storage capacity 33 imp. gals ea. Hourly input 36,000

Size of flue pipe 4" Does this pipe connect to the same chimney as the heating system. Yes

Does this residence have air conditioning No

Central _____ Window units _____ How many? _____

HEATING SYSTEM

Present Furnace.

Trade Name Tempmatic

Model 4205-19-1

Manufacturer Tempmatic Man. Ltd.

Rated Input 50,000 BTU/hr

Age 1 1/2 years

Type of Ignition Pilot

Type of Venting 5" B vent

Test Furnace.

Trade Name Same as present

Model _____

Manufacturer _____

Rated Input _____

Age _____

Type of Ignition _____

Type of Venting _____

Vent damper on test.

TEST CHANGES:

HOMEOWNER QUESTIONNAIRE

GENERAL INFORMATION

Name of occupant K. Gray

Installation address 93 Valley Stream Drive, Scarborough

Single Family Residence? Semi-detached Multiple? _____

Approx. age of structure 1 year How long have you resided? 1 year

No. of occupants 6 Adults 4 How many are employed 3

If two or more, which hours 2 @ 8:00-4:00 1 @ shift

What indoor temperatures do you maintain:

While at work 68-71°F (20-21°C) Hours Always

Daytime _____ Hours _____

Nighttime _____ Hours _____

STRUCTURE

Do you have a basement Yes Is it heated Yes

Number of stories 2

Type of construction (Brick or frame) Frame

Does it have storm windows Thermal Storm doors 1 (Front)

Is it insulated Yes Was any insulation installed recently No

If so, when _____ Where, and thickness _____ Type _____

In your opinion, is building of tight construction Not really

No. of basement windows 1 Do they close tightly Yes

Is the door to the basement normally closed Yes

No. of exhaust fans: Kitchen 1 Bathroom 2 Other -

Where is thermostat located (room) Dining room Inside or Outside wall Inside

Does this house have a fireplace Yes Does it have a good damper Yes

APPLIANCES

Does this residence have a gas light No

Input or number of mantles _____

Does this residence have an electric or gas range Electric

If gas: Type _____ Location _____

Does this residence have a gas grill Propane

Hourly inputs _____ How often is it used _____

Does this residence have a gas or electric clothes dryer _____

If gas: Location _____ Vented to outdoors? _____

Size of vent pipe _____ Hourly input _____

How often is it used _____

Does this residence have a gas fired water heater Yes 1) CGRI High Efficiency 2) Conventional Consumers' rental

Storage capacity 33 imp. gals. Hourly input _____

Size of flue pipe 4" Does this pipe connect to the same chimney as the heating system. Yes

Does this residence have air conditioning Yes

Central Yes Window units - How many? -

HEATING SYSTEM

Present Furnace.

Trade Name Tempmatic

Model 4205-19-1

Manufacturer Tempmatic Mfr.

Rated Input 50,000 BTU/hr

Age 1 year

Type of Ignition Pilot

Type of Venting 5" B vent

Test Furnace.

Trade Name Same as present

Model _____

Manufacturer _____

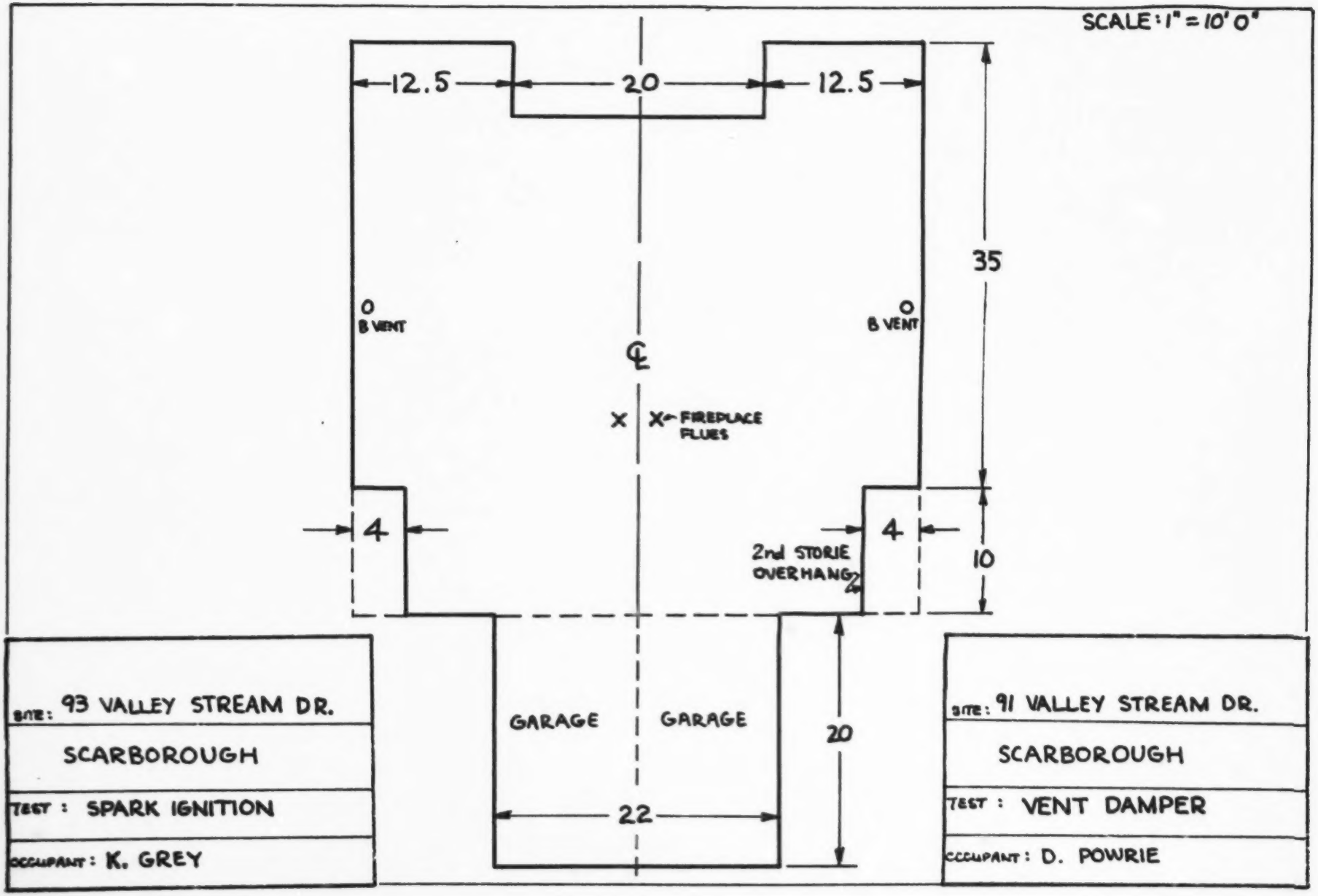
Rated Input _____

Age _____

Type of Ignition Spark on test

Type of Venting _____

TEST CHANGES:


SCALE: 1" = 10' 0"
12.5
20
12.5
35
B VENT
B VENT
FIREPLACE FLUES
4
4
2nd STORIE OVERHANG
10
GARAGE
GARAGE
20
22
SITE: 93 VALLEY STREAM DR.
SCARBOROUGH
TEST: SPARK IGNITION
OCCUPANT: K. GREY
SITE: 91 VALLEY STREAM DR.
SCARBOROUGH
TEST: VENT DAMPER
OCCUPANT: D. POWRIE

SITE: G

Address: 305 Dunlop Street, Whitby.

Test: Automatic Vent Damper.

(Photographs to follow).

HOMEOWNER QUESTIONNAIRE

GENERAL INFORMATION

Name of occupant W. Currier

Installation address 305 Dunlop E., Whitby

Single Family Residence? Yes Multiple? _____

Approx. age of structure 26 years How long have you resided? 7 years

No. of occupants 5 Adults 2 How many are employed 1

If two or more, which hours _____

What indoor temperatures do you maintain:

While at work 68°F (20°C) Hours 7

Daytime 68°F (20°C) Hours 9

Nighttime 65°F (18°C) Hours 8

STRUCTURE

Do you have a basement Yes Is it heated Yes

Number of stories 2

Type of construction (Brick or frame) Brick

Does it have storm windows _____ Storm doors Yes

Is it insulated Yes Was any insulation installed recently Yes

If so, when 1979 Where, and thickness Attic R20 Type Poured

In your opinion, is building of tight construction Yes

No. of basement windows 3 Do they close tightly Yes

Is the door to the basement normally closed No

No. of exhaust fans: Kitchen _____ Bathroom _____ Other _____

Where is thermostat located (room) Living room Inside or Outside wall Inside

Does this house have a fireplace 2 Does it have a good damper Yes

APPLIANCES

Does this residence have a gas light No

Input or number of mantles _____

Does this residence have an electric or gas range Gas

If gas: Type Speed Queen Location Kitchen

Does this residence have a gas grill BBQ

Hourly inputs 39,000 How often is it used Twice weekly

Does this residence have a gas or electric clothes dryer Electric

If gas: Location _____ Vented to outdoors? _____

Size of vent pipe _____ Hourly input _____

How often is it used _____

Does this residence have a gas fired water heater Yes

Storage capacity 33 Imp. gals. Hourly input 36,000 BTU

Size of flue pipe 4" Does this pipe connect to the same chimney as the heating system. Yes

Does this residence have air conditioning Yes

Central Yes Window units Yes How many? One

HEATING SYSTEM

Present Furnace.

Trade Name Lennox C1-41-1FF72

Model G8-122-2

Manufacturer Lennox Ind.

Rated Input 122,000 BTU/hr

Age 7 years

Type of Ignition Pilot

Type of Venting B vent

Test Furnace.

Trade Name Same as present furnace

Model _____

Manufacturer _____

Rated Input _____

Age _____

Type of Ignition _____

Type of Venting _____

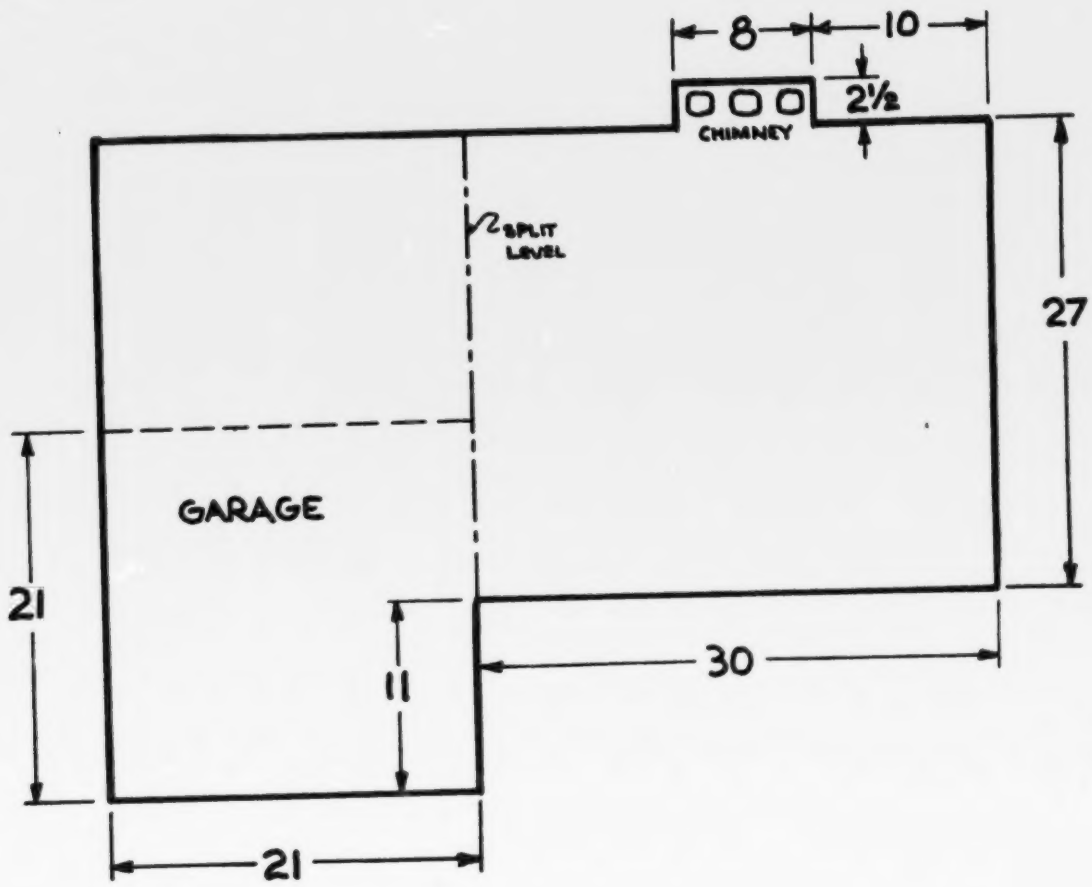
TEST CHANGES:

SITE: 305 DUNLOP ST. EAST

WHITBY

TEST: VENT DAMPER

OCCUPANT: W. CURRIER



SCALE: 1" = 10' 0"